Agricultural Income and Finance

Situation and Outlook Report

Increases in Planted Acres Expected To Contribute to Higher Farm Expenses in 1994

Percent

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Summary

Net Farm Income To Rise in 1994

Net cash income from farming is expected to range between $53 billion and $63 billion in 1994, compared with an average of $57 billion during the past 5 years. An expected $5-billion inventory adjustment should boost net farm income to $45-$55 billion. Incomes of farm operator households are expected to increase as well.

Gross farm income is forecast to rise in 1994 as crop and livestock production increases. Farmers intend to increase planted acres for all major crops except wheat. Increases in feed grain acreage are likely due to lowered Acreage Reduction Program (ARP) requirements and recovery from excessive rains and flooding in 1993. Anticipated higher prices are the likely incentive for increasing acreage planted to cotton and rice. Crop yields are expected to return to normal levels. Crop inventories, which were depleted in 1993, probably will be rebuilt in 1994 due to the increased acreage and the return to normal crop yields. Increased livestock and poultry production is expected to translate into higher cash receipts for animal products.

Government deficiency payments are forecast at $5-$6 billion in 1994, down from nearly $9 billion in 1993. Disaster payments will probably remain about the same as in 1993 as claims are paid for flood and drought damage.

Farm expenses are expected to increase for most items in 1994. Interest expenses will rise as interest rates climb from their low 1993 levels. Rising petroleum prices in the past several months will likely increase farm expenditures for petroleum-based farm inputs. Also, increases in planted acres will boost purchases of inputs associated with crop production.

The value of farm assets is expected to increase 3-4 percent in 1994, slightly more than the rate of inflation as measured by the GDP price inflator, while farm debt is forecast to increase just over 1 percent. Lenders have sufficient funds to lend, but farm operators remain cautious about acquiring additional farm debt.

The proposed Health Security Act would change the way farm businesses handle health insurance for themselves and hired farm workers. Many farms do not hire labor, and their farm business costs will be unchanged. However, farm households may see changes in insurance coverage from off-farm jobs and in expanded deductions for self-employment health insurance premiums.

What Do Preliminary and Forecast Mean?

Estimates are based on available data. Forecasts are projections of what might happen in the future. Forecasts are based on available data, econometric models, and analysts' judgment. Most data used to compute preliminary and historical data on net farm income are acquired from agricultural surveys. As survey results become available, forecasts are changed to preliminary estimates. Preliminary estimates are computed using recently received data and are subject to revision as more complete data become available. Preliminary estimates become historical estimates when all annual data have been received and incorporated.

Because limited data are currently available on 1994 farm income components, ERS' 1994 farm income figures are forecasts. Net farm income and net cash income figures for 1993 are computed by combining recently received data and the latest forecasts for those items where no data have been received. Cash receipts and Government payments included in the 1993 estimates contained in this issue of Agricultural Income and Finance Situation and Outlook are based largely on survey data while production expenses remain forecasts. This is due to the differing times when data from various sources are received.

Cash receipt data come from the National Agricultural Statistics Service (NASS) in the form of official published estimates and estimates from NASS' specialists who derive data for commodities and States that are not included in NASS' publications. Final data on Government payments are obtained for the previous year from the Agricultural Stabilization and Conservation Service by June 1. Production expense data are obtained from USDA's annual Farm Costs and Returns Survey. Estimates of production expenses, based on observed data, will not be available for use in finalizing estimates of net income for 1993 until early July.

Net Farm Income To Increase in 1994

Net farm income in 1994 is expected to be up from 1993 as crop and livestock production increases. Increases in planted acreage and the expected return to normal crop yields should boost production and increase inventories in 1994. Farm expenses are expected to rise moderately.

Farmers report they intend to increase plantings of major crops, except wheat, in 1994. According to USDA's March 31 *Prospective Plantings* report, corn acreage could rise 7 percent, soybean acreage 3 percent, and cotton acreage 3 percent. The increase in feed grain acreage is probably due to the lowered acreage reduction program requirements for the 1994/95 season and recovery from excessive rains and flooding in 1993. Increases in cotton and rice planted acreage are probably in response to expected higher prices as world production declines and export prospects strengthen. The increased acreage and expected return to more normal yields will raise production, especially in relation to last year's disaster-reduced levels.

Livestock Production Up in 1994

Beef production in 1994 is expected to be up 4 percent from 1993's weather-reduced levels. Rising slaughter weights and increased slaughter rates are expected to boost beef production to the highest level since 1986. Broiler production is expected to be up 5 percent to a record high in 1994. The increase in broiler production is in response to several years of favorable returns.

Government Payments Return to $6-$10 Billion

Disaster payments added $1.5 billion to 1993 Government payments and will probably be about the same in 1994 as claims are settled for the flood and drought damage to the 1993/94 crops. However, 1994 deficiency payments are forecast at $5-$6 billion, leaving total Government payments at $6-$10 billion, which are down from 1993.

Expenses Still Moderate

For 1994 expenses could rise 2-4 percent. Behind this moderate increase are higher expenses for all inputs except feeder livestock. With increased livestock production and crop acreage, demand for inputs is rising. By broad input category, 1994 interest expenses are rising as rates increase from some of the lowest levels in recent years. Short-term interest costs could rise nearly 10 percent. Energy-based inputs, such as fuels, pesticides, and fertilizers, will cost more as oil prices rise after remaining low for several months. The increase in planted acres will lead to an associated increase in the use of crop production inputs, such as fertilizer and fuel. The increased quantities will contribute to the 4- to 5-percent increase in manufactured input expenses.

Net Farm Income To Recover

The value of inventory adjustments is used in conjunction with cash receipts in the net farm income account to measure the net value of agricultural production during a calendar year. In 1994 crop inventories are expected to be rebuilt as the number of planted acres increases and yields return to normal. Over $5 billion in forecast inventory adjustments will push net farm income to $45-$55 billion in 1994.

Average Household Income Steady to Up Slightly

"Average" farm operator household income does not vary much from year to year. This is because two-thirds of U.S. farms and ranches are small part-time agricultural operations who depend in large part on off-farm jobs for family income. The average farm household income for 1994 is forecast to be up slightly from 1993's $40,700. Farm households that operate large farms (those with gross sales of $50,000 or over) depend more on farm income than smaller farms. Therefore, their incomes are tied closely to the farm sector's performance. With net cash farm income steady for the sector, these farm households should continue their high levels of income from last year.

Despite Disasters, Gross Cash Income Rose in '93

Despite the heavy rains and floods in the Midwest and droughts in the East that plagued many crop producers, preliminary estimates indicate that gross cash income from farming rose in 1993 as those with products to sell benefited from high prices. With heavy rains and flooding beginning early in the growing season, markets responded with higher prices at mid-year. Crop losses were partially offset by sales of stored grains. In Iowa, one of the States hit by heavy rains and floods, preliminary indications show crop cash receipts down only 11 percent in 1993. Iowa's livestock receipts rose 5 percent, leaving the State's total receipts down 2 percent. The majority of Corn Belt farmers outside the disaster area sold both 1992/93 crops and 1993/94 crops at disaster-induced higher prices. For example, Indiana's cash receipts rose 13 percent. Of course, Indiana's receipts are only half of Iowa's.

Although still in the edit and review process, survey data for farmers' and ranchers' expenses are indicating a rise for 1993 that could offset the increase in gross cash income. The drop in 1993's net farm income reflected the drop in agricultural production caused by the flood and drought. In 1993 the value of inventory adjustments fell as producers reduced their stored grain stocks in response to higher grain prices.

Figure 1
Major Crop Receipts Strong
Billion $

Legend: 1992, 1993P, 1994F

Categories: Corn, Soybeans, Wheat, Cotton
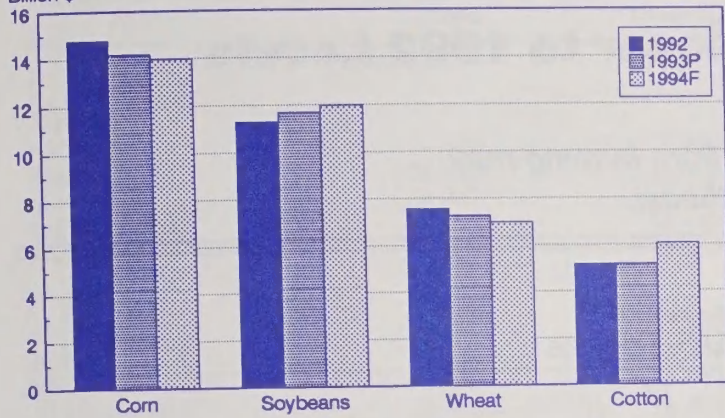
Figure 2
Livestock Receipts Also Expected Strong
Billion $

Legend: 1992, 1993P, 1994F

Categories: Cattle, Hogs, Broilers, Dairy
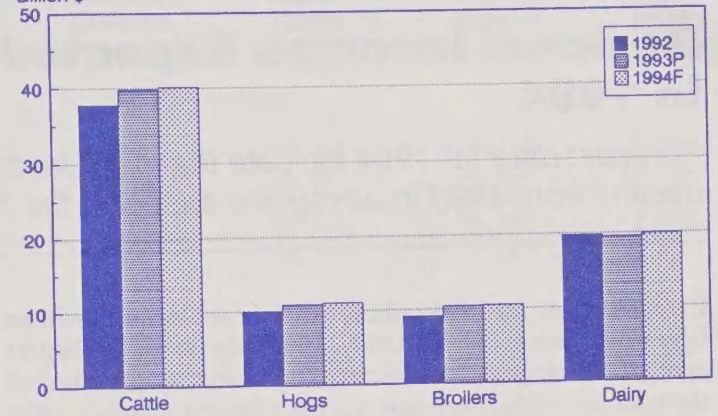
Figure 3
Direct Government Payment Components
Billion $

Legend: Other payments, Conservation, Deficiency & diversion, Disaster payments

Years: 1990, 1991, 1992, 1993P, 1994F
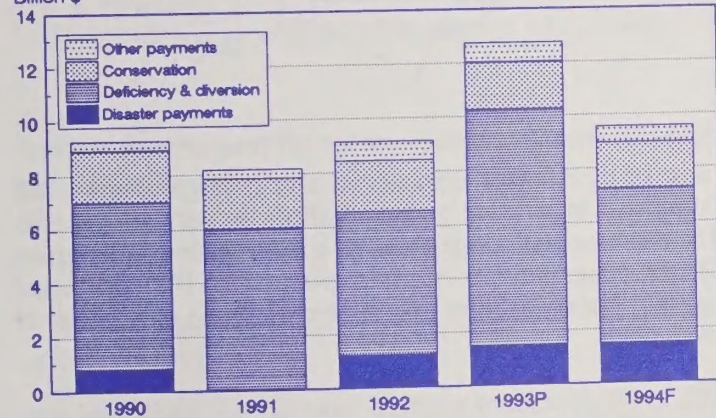
Figure 4
Net Cash Income and Net Farm Income
Billion $

Net cash income — High, Low
Net farm income — High, Low

Years: 1990, 1991, 1992, 1993, 1994F
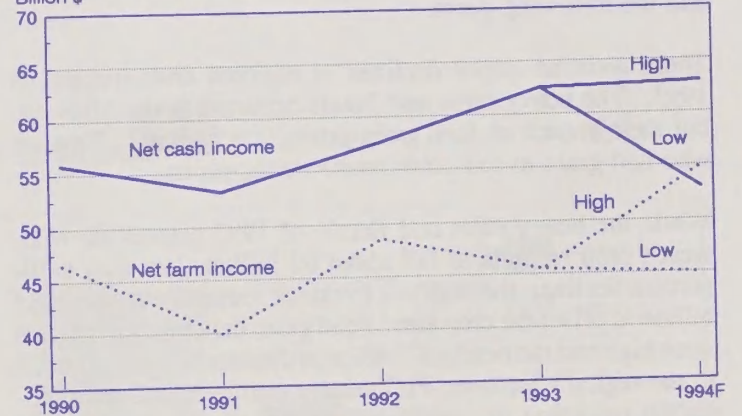
Regional Incomes Expected Closer to 1992 Levels In 1994

Forecast data for 1994 indicate that cash income from farming may decline from 1993 in all regions except in the Northeast.

Early forecasts for 1994 indicate average net incomes will be below last year but above 1992. The Midwest has the largest agricultural income, contributing approximately one-third of the national total. Forecasts for the Midwest show its 1994 net cash income down 4-6 percent from last year but up 7-10 percent from 1992. Disaster payments still play a major role in the Midwest as claims are settled for the 1993/94 crop.

The West is the second largest region in terms of agricultural income and its 1994 income will likely be down from both 1993 and 1992. Renegotiation of water contracts in the West is expected to increase expenses and reduce income in 1994 and the following years.

There were no major declines in regional crop receipts in 1993. The heavy rains and floods occurred in the Midwest, but their impact on feed grain prices was national. Farmers who had grain to sell could make strong profits.

While the heavy rains and floods of 1993 caused the Midwest's crop receipts to fall about $2 billion (less than a 10-percent decline), the region's livestock receipts rose about $2 billion to offset the crop loss. Feed grain deficiency payments were high and the nearly $2 billion in disaster assistance added to the region's income. Preliminary estimates indicate a $5-billion reduction in crop inventories in the Midwest. As a result, 1993 net farm income for the Midwest may be down 33 percent from 1992. Higher livestock receipts also offset crop losses in the Southeast, leaving its net cash income up about 5 percent.

Smallest Farms Show Largest Declines in 1994

Small operations (gross agricultural sales under $40,000) will continue to experience low net cash incomes in 1994. Be-

Figure 5
U.S. Regions
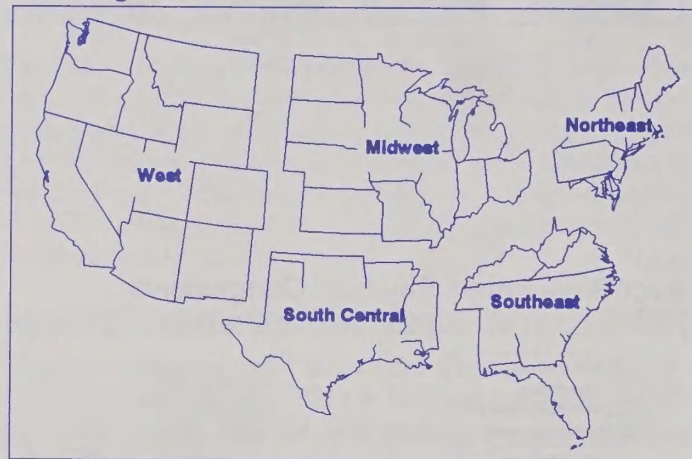
cause of their higher expenses relative to larger farms, small farms will experience greater declines in net cash income. The decrease will range from 15 to 28 percent. This group of farms accounts for nearly two-thirds of U.S. farms and ranches, but contributes only 6 percent of the gross value of production.

The larger operations produce most of U.S. crops and livestock. Except for the larger groups (gross sales exceeding $500,000), these farms and ranches are expected to see net cash incomes decline from 1993. The two largest groups will probably hold steady with last year or see a slight increase. Of course, commodity mix will influence an individual operation's financial position. Broiler prices are forecast to be particularly strong, as are cotton and rice prices. Cattle and hog receipts probably will be about the same as in 1993.

Table 1—-Regional net cash income, 1992-94

| Region | Cash receipts | | Direct Government payments | Gross cash income 1/ | Cash expense | Net cash income |
	Crops	Livestock				
			Million dollars			
1992						
Northeast	4,400	7,080	151	12,140	8,101	4,040
Midwest	33,680	34,632	4,353	74,461	55,927	18,534
Southeast	14,167	12,874	726	29,470	17,280	12,189
South Central	9,746	14,409	2,371	27,737	19,821	7,916
West	22,817	17,365	1,566	44,085	29,027	15,058
1993F						
Northeast	4,349	7,160	205	11,947	8,141	3,806
Midwest	31,666	36,815	8,100	77,338	56,153	21,185
Southeast	13,414	13,977	766	30,445	17,692	12,753
South Central	10,470	14,603	2,173	28,705	20,270	8,435
West	24,912	17,016	1,497	46,103	29,769	16,335
1994F						
Northeast	4,243	7,839	106	12,579	8,305	4,274
Midwest	32,788	37,672	4,962	78,260	58,116	20,144
Southeast	13,775	14,058	503	30,291	18,310	11,981
South Central	11,105	15,565	1,344	28,871	20,852	8,018
West	25,847	15,901	925	44,522	30,697	13,825

F = forecast.
1/ Includes income from other sources not listed.

Figure 6
Larger Farms and Ranches Gaining Share of 1994 Net Cash Income

Percent of U.S. net income

Gross Sales Class
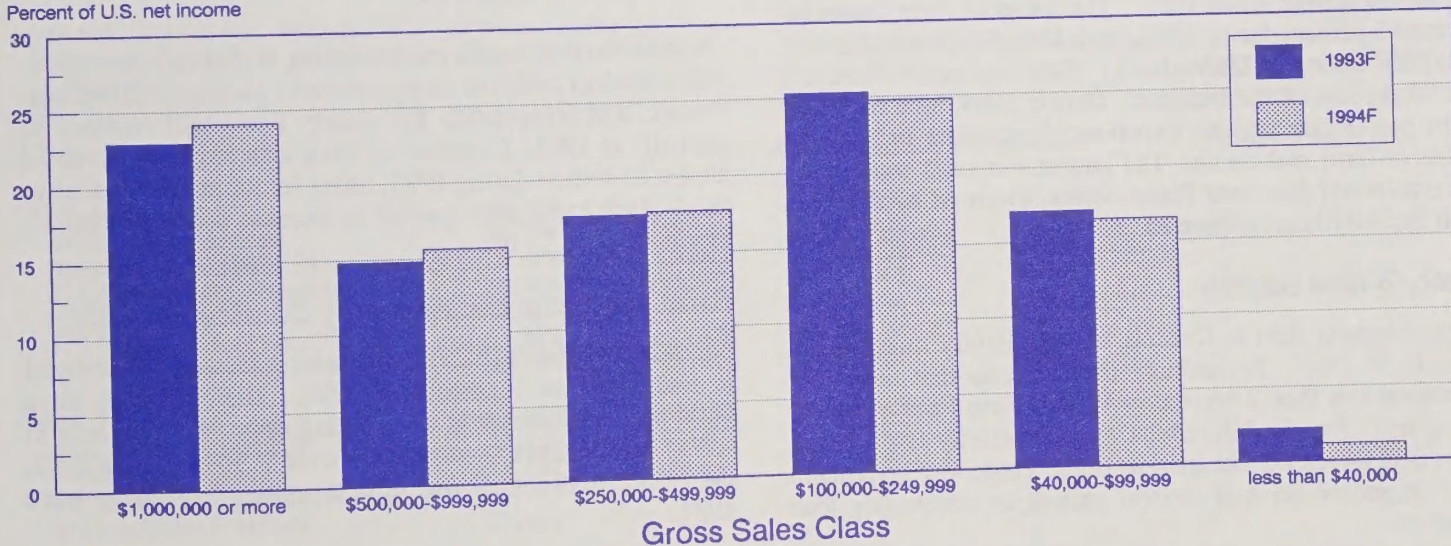
Equity in Farm Assets Continues To Increase in 1993-94

*Asset values are expected to rise in 1994, perhaps exceeding inflation.
In 1993 the percentage increase in the total value of farm real estate
exceeded inflation for the first time since 1987. Increases in farm debt
are expected to remain modest.*

Asset values in 1994 are expected to increase 3 to 4 percent. If current levels of inflation hold during 1994, (GDP deflator rising 2.3 percent) the real value of farm assets will increase for the second consecutive year. A similar rate of increase in farm real estate accounts for most of the projected increase in farm asset values. Yearend inventory values for livestock and poultry, machinery and motor vehicles, crops, purchased inputs, and financial assets are expected to exceed beginning-year values. At the end of 1994, the value of U.S. farm business assets, which excludes operator household assets, is expected to exceed $915 billion.

Changes in aggregate asset values forecast for 1994 are slightly larger than those estimated for 1993. The value of U.S. farm sector assets increased more during 1993 than was expected a year ago, due in part to an increase in the total value of farm real estate that exceeded the rate of inflation for the first time since 1987. The value of farm assets increased 3 percent during 1993, from $865.5 billion on January 1 to $888 billion on December 31. Farm real estate accounted for 90 percent of the increase. During 1993, nine of the 10 farm production regions experienced increases in the total value of farm real estate. The largest increases were in the Mountain and Northern Plains States, followed by the Corn Belt and Northeast (figure 8).

Debt To Rise Slightly

Farm business debt is forecast to rise slightly more than 1 percent in 1994. Preliminary data indicate that farm debt increased less than 2 percent in 1993. When Farmers Home Administration (FmHA) direct lending activity is excluded, farm debt increased 3 percent in 1993. These increases maintain the recent trend of modest growth in outstanding loan balances.

The continuing recovery of the agricultural economy and the impacts of the 1993 flood and drought have not produced a significant rise in loan demand. The rise in net cash income in 1993, and the expectations of favorable earnings in 1994 suggest that farmers may have adequate cash to meet their needs with little additional borrowing.

Credit Availability

The abnormal weather effects of 1993 have been felt in the seasonal pattern of farmers' use of credit, rather than in a rapid rise in outstanding loan balances. Anecdotal evidence indicates that farmers were borrowing later in the year, and lenders were more willing to offer extensions and renewals to those experiencing weather-related repayment difficulties.

Even though the sector should enjoy relatively favorable net cash income, farmers operating on tight margins in 1994 may find it more difficult to obtain operating credit from traditional sources, especially if they were financially stressed in 1993. The reduction in FmHA direct lending programs means that marginal operations have fewer credit alternatives. Input suppliers may be partially filling this credit void by offering favorable financing terms to purchasers.

Otherwise, lenders generally have reported ample funds to meet the expected 1994 borrowing needs of credit-worthy customers. While stable to rising land values have at least partially restored lender confidence in the security of loans collateralized by farmland mortgages, lenders' increasing emphasis on borrowers' ability to meet debt service requirements from current cash flows has created a more restrictive definition of credit-worthiness.

Despite the tight credit market facing higher risk loan applicants, lenders continue to aggressively pursue qualified borrowers, and competition for quality loans will continue to intensify in 1994. Commercial bank loan balances increased almost $3 billion during 1993, rising for the sixth consecutive year. Bank loans are expected to increase another $1 billion in 1994.

Farm Credit System Recovery Continues

Farm Credit System (FCS) farm business loans are anticipated to rise less than 1 percent in 1994. The FCS reported a $200-million decrease in outstanding farm business loans in 1993. This follows an increase of over $230 million in 1992, the FCS's first annual rise in outstanding farm loans since 1984.

Despite the FCS's difficulty in increasing loan balances and in regaining market share, its financial performance improved. As interest rates declined through the end of 1993, the FCS's net interest margin improved during 1990-93. The improving financial condition of borrowers translated into better conditions for FCS as nonaccrual loans declined from over 5 percent in 1990 to 2.7 percent by the end of 1993.

Lenders' Shares of Farm Loans Change

Bank and FCS market shares are expected to have increased in 1993, as their combined share approaches 63 percent. Commercial banks surpassed the FCS as the principal lender to agriculture in 1987. Commercial banks' share of farm lending increased from 22 percent in 1982 to 37 percent by the end of 1992. Banks' share of real estate debt rose from

less than 8 percent in 1982 to 25 percent in 1992. The FCS' market share stabilized at about 25 percent during 1988-92, after falling from 34 percent in 1982.

FmHA Writeoffs

Farmers Home Administration (FmHA) loan balances fell more than $1.4 billion in 1993, as the agency maintained a rate of debt reduction in excess of 10 percent. FmHA direct loans declined 12 percent in 1993 and may decline another 12 percent in 1994. Early implementation of debt restructur-

ing provisions of the Agricultural Credit Act of 1987 resulted in a nearly $3- billion decrease in FmHA's loan balances in 1989. FmHA debt reduction slowed to $2 billion in 1990, and $1.7 billion in 1991 and 1992.

FmHA's direct loan balances dropped more than a 50-percent during 1986-93. The $12.5-billion reduction reduced the FmHA's problem loan portfolio to a slightly more manageable level. However, as of March 31, 1993, delinquent FmHA loan payments (including principal and interest) were over $4.1 billion.

Figure 7
Nominal and Real Values of Farm Assets
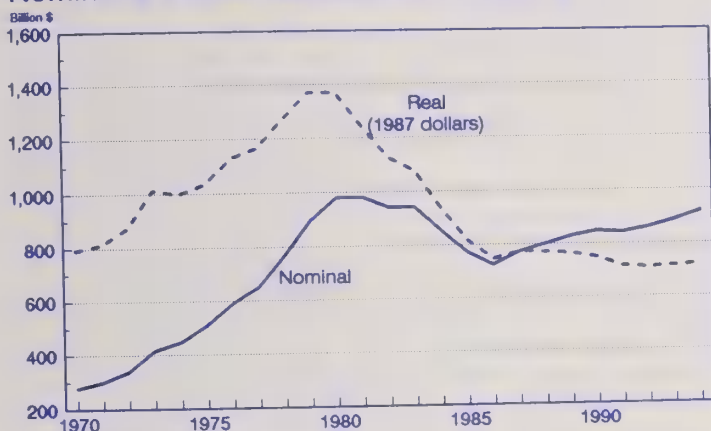
Figure 8
Percent Change in 1993 Farm Real Estate Values
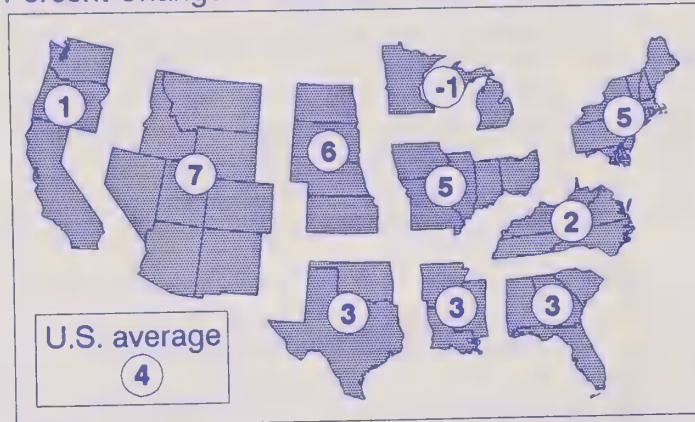
Table 2—Farm debt, December 31, selected years

Lender	1984	1986	1989	1992	1993P	1994F
	Million dollars				Billion dollars	
Real estate	106,697	90,408	75,351	75,639	76	75 to 79
Farm Credit System	46,596	35,593	26,674	25,271	25	24 to 26
Farmers Home Administration	9,525	9,713	8,130	6,361	6	5 to 7
Life insurance companies	11,891	10,377	9,045	8,718	9	9 to 11
Commercial banks	9,626	11,942	15,551	18,659	20	19 to 21
CCC storage facility	623	123	12	2	*	*
Individuals & others	28,438	22,660	15,939	16,628	17	16 to 18
Nonreal estate	87,091	66,563	61,881	63,631	66	64 to 68
Commercial banks	37,619	29,678	29,243	32,912	35	34 to 36
Farm Credit System	18,092	10,317	9,544	10,346	11	10 to 12
Farmers Home Administration	13,740	14,425	10,843	7,143	6	5 to 6
Individuals & others	17,640	12,143	12,250	13,230	14	14 to 16
Total debt	193,788	156,971	137,231	139,270	142	140 to 146
Farm Credit System	64,688	45,910	36,218	35,616	35	34 to 37
Farmers Home Administration	23,263	24,138	18,974	13,504	12	10 to 12
Commercial banks	47,245	41,620	44,795	51,571	55	54 to 58
Life insurance companies	11,891	10,377	9,045	8,718	9	9 to 11
Individuals & others	46,701	34,926	28,201	29,860	31	31 to 33

P = preliminary; F = forecast.

Economic Outlook Strengthens for Remaining 1994 and 1995

The recovery gained strength and became more broadly based in late 1993 and early 1994. Moderate growth and low inflation are expected to continue for the remainder of 1994 and 1995.

The economy continued to strengthen significantly in early 1994. During the first 2 years of the current economic recovery, which began in the second quarter of 1991, economic growth was slow relative to typical early stages of recent recoveries. Real GDP grew at an average rate of 2.5 percent in the first 2 years of the current recovery. Much of the slower growth was due to high consumer and business debt burdens and a banking system that was struggling to improve profitability and meet higher regulatory capital standards.

Over the last year of the recovery, (second-quarter 1993 to first-quarter 1994) real economic growth increased to 3.7 percent. Economic growth picked up dramatically when real GDP grew at an annual rate of 7.0 percent in fourth- quarter 1993 but slowed to a more sustainable 3.0-percent rate for the first- quarter 1994. The 7.0-percent real GDP growth rate was aided by unsustainable growth in consumer durable goods purchases, business equipment investment, and residential construction that collectively grew at an annual rate of over 22 percent in the fourth quarter. Growth in first-quarter 1994 was held down by severe winter weather, California's earthquake, and a fall in government spending.

The strengthening recovery has led to recent more rapid growth in employment and industrial production. Typically, in the early stage of a recovery, employment expands more slowly than the general economy. However, as the expansion gains momentum, employment growth tends to increase. Over the last year, growth in nonagricultural employment increased to 1.8 percent after averaging less than 0.5 percent from second-quarter 1991 to first-quarter 1993. Reflecting the more rapid expansion of employment and hours worked, growth in real personal disposable income increased to 3.9 percent over the last year (second-quarter 1993 to the first-quarter 1994) compared with 1.8-percent rate in the first two years of the expansion.

Industrial production has expanded rapidly in the last year in response to strong demand for durable consumer goods and business equipment. Overall, industrial production expanded from 3.1 percent in the first 2 years of the recovery to 4.8 percent over the last year. Most of the increased growth in industrial production has occurred in durable goods production, which grew 8.2 percent over the year ending in the first-quarter 1994.

Inflation Has Continued To Fall, Improving the Economic Outlook

The sustainability of the recovery has also been aided by low and declining inflation. Inflation, as measured by the implicit GDP deflator, averaged 2.9 percent from second-quarter 1991 to first-quarter 1993. Over the year ending with the first quarter of 1994, the GDP deflator fell to 1.9 percent. While lower petroleum prices over the last year have helped lower inflation, the decline in inflation has been broad based. Consumer and producer price indexes, measures of inflation, that exclude food and energy prices have also fallen roughly 1 and 2 percentage points, respectively, over the last year. The increase in labor productivity in the 1990's has helped reduce inflationary pressures. Productivity increases thus far in the 1990's have averaged 2.0 percent compared with less than 1.0 percent in the 1980's.

Low rates of inflation promote economic growth by reducing uncertainty, economic distortions, and transactions costs. Stable, low inflation reduces uncertainty concerning future inflation, thus encouraging the use of cost saving long-term contracts for materials, labor, and financing.

Low levels of inflation also reduce tax distortions generated by historical cost accounting that in an inflationary environment raise real business tax rates. Society devotes less time and effort on economizing on money holdings and more on improving real economic productivity when inflation rates are low. Finally, since the total costs of inflation rise with the level of inflation, short-term contractionary monetary and fiscal policy that reduce both inflation and near term economic real growth becomes more likely in a rising or high inflation environment.

Increased Foreign Growth Should Strengthen U.S. Exports in 1994-95

U.S. net exports have continued to deteriorate in the current expansion. At the end of the recession in first-quarter 1991, the U.S. real trade deficit in goods and services stood at less than $22 billion. By first-quarter 1994, the trade deficit had risen to over $101 billion. While real U.S. exports have risen at an annual rate of 6.0 percent during the economic recovery, real U.S. imports have risen at an annual rate of 10.0 percent. The trade deficit increase reflects severe recessions in Western Europe and Japan, improving U.S. growth, and, to a lesser extent, an overall appreciation in the real value of the dollar against most of the currencies of U.S. trading partners since the U.S. economic recovery began.

Real economic growth was very slow for most developed country trading partners in second-half 1993. Economic growth is expected to pick up gradually for most developed country trading partners in 1994 and 1995, thus boosting the demand for U.S. exports. If maintained, the overall 2.0 percent fall in the real value of the dollar since January should further improve the trade outlook.

U.S. Interest Rates Rose Significantly in Early 1994

Short-and long-term interest rates increased significantly in early 1994. Long-term interest began rising in mid-October 1993. From early January to mid-May, yields on 3-month Treasury bills and 30-year T-bonds rose from 3.0 percent to 4.3 percent and from 6.4 percent to 7.3 percent, respectively. Rising interest rates on default-free Treasury securities have pushed lending rates of private borrowers upward as well. For example, from the beginning of the year through mid-May, the prime rate has increased from 6.0 percent to 7.25 percent and rates on conventional mortgages have increased from 7.2 percent to 8.8 percent.

The rise in short-term interest rates primarily reflected a three-step rise in the federal funds rate to 4.25 percent from 3.0 percent and a one-step rise in the discount rate from 3.0 to 3.5 percent by the Federal Reserve Board. The rise in longer-term interest rates was primarily due to concern that inflation and real interest rates may rise over the next few years.

The Federal Reserve Board tightened monetary policy because of its belief that, given the recent strength of economic activity, a less expansionary monetary policy was now consistent with the long-term goals of economic growth with little or no inflation. The recent rate of economic growth, if continued, would eventually strain economic capacity and place upward pressure on inflation. Moreover, excessive monetary expansion would encourage the continuation of the recent fall in the dollar's value, putting upward pressure on prices of U.S. imports and eventually general domestic prices.

Many economists argue that the shift in policy has been moderate given the fundamentally stronger U.S. economy. In addition to recent reports of more rapid economic growth, growth in bank credit indicates a fundamentally stronger economy for the remainder of 1994 as well. For example, commercial banks' loans and leases expanded at an annual rate of 4.4 percent in first 4 months of 1994, compared with 3.5 percent for all of 1993.

Outlook for 1994-95 and Implications For Agriculture

The outlook for the rest of 1994 and 1995 is for moderate economic growth with continued low inflation. The recovery should continue to be fueled by strong business and residential investment, despite higher interest rates. Growth in consumer spending is expected to be moderate.

Business investment is expected to continue to expand rapidly as firms increase capacity to meet stronger future demands.

Figure 9
Inflation Rate Measured by GDP Deflator
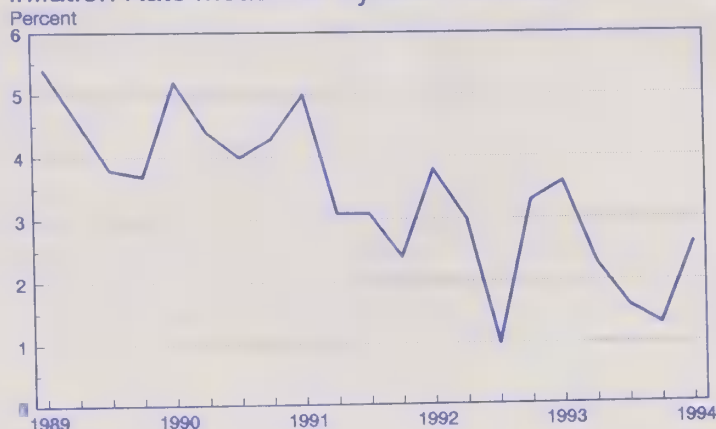
In the first quarter, industrial production expanded at an annual rate of 7.7 percent, raising capacity utilization to 83.4 percent. In recent years, business firms have expanded their ability to finance new investment through improved earnings and stronger balance sheets.

Recent growth in employment, personal income, and housing prices has improved consumer optimism and debt capacity. The improvement in consumer confidence over the last year should allow for moderate growth in residential construction and consumer spending. In recent years, consumer debt burdens relative to disposable personal income have been reduced through lower interest rates, mortgage refinancing, and a substituting of less expensive forms of consumer credit, such as home equity loans, for more expensive forms of consumer credit.

Inflation is likely to increase only slightly in 1995. The level of capacity utilization or rate of employment consistent with stable inflation depends on other factors, including labor productivity growth, oil and weather shocks, and the government's credibility toward achieving long-term low inflation. Any increase in inflation should be relatively small in 1994 and 1995, given the likelihood of moderate economic growth, continued strong gains in productivity, the recent tightening of monetary policy, and recent actions to reduced long-term government deficits.

Demand for agricultural products should increase with the improved outlook for economic growth. Agriculture and rural America should benefit from higher foreign economic growth in 1994 and 1995. Continued low inflation in the United States should temper increases in most farm production expenses. Interest rates on commercial banks' real estate and non-real estate agricultural loans are expected to increase moderately in 1994 and 1995. However, increases in agricultural loan rates at commercial banks are likely to be smaller than interest rate increases in the general economy due to the large role of small banks in agricultural lending. Smaller banks typically adjust their loan terms more slowly to changing open market credit conditions.

Health Insurance and Farm Operator Households

by Janet Perry[1]

Abstract: The proposed Health Security Act would change the way farm businesses handle health insurance for themselves and hired farm workers. Many farms do not hire labor, and their farm business costs will be unchanged. The farm household may see changes in insurance coverage from off-farm jobs and in expanded deductions for all-employment health insurance premiums.

Keywords: Health insurance, farm insurance, Farm Costs and Returns Survey

Many employment laws, such as those in the Occupational Safety and Health Act, Federal Insurance Contributions Act, and the Federal Unemployment Tax Act, are adjusted for the farm sector's special circumstances. While farmers will not have special exemptions in the proposed Health Security Act, many of them will be affected by special provisions for the self-employed. Farm operators and farm businesses will also see changes in the tax treatment of health insurance, limits on the cost of health insurance for small businesses, and financial subsidies for low income households.

The proposed Health Security Act redesigns the current system of health care. The primary objective of the Act is to ensure that health coverage would be available at a reasonable price to everyone and that no one would be denied coverage because of his or her health, employment, or financial status. This report examines the impact of the proposed Act on farmers as employers, and as employees in off-farm jobs.

The Current Situation

Spending on health care rose faster than inflation over the last 5 years. Many employers have dropped health insurance coverage for their employees or have never offered it. Not all insured workers received coverage through their employer. Many are covered by private policies. Frequently low wage earners, part-time workers, and the unemployed cannot afford private health insurance. The Current Population Survey (reported by the Congressional Budget Office) provides evidence that 15 percent of workers did not have health insurance in 1992. Another 2.3 percent were covered by public insurance such as Medicaid, Medicare, and coverage provided by the Department of Veterans Affairs.

Few agricultural labor households have health insurance. For many agricultural enterprises the demand for hired labor is seasonal and thus does not require full-time workers. Employers usually provide health insurance only to full-time employees. Also, most agricultural labor is not unionized, which makes it less likely that employers will be obligated by contract to provide benefits such as health insurance. Finally, in many agricultural labor markets, there is not enough

competition for workers to force employers to offer benefit packages.

The proposed Act requires employers to make premium contributions for their employees. Because self-employed individuals are treated as an employer and employee, special provisions in the proposed Health Security Act affect them. Ninety percent of farms and ranches were organized as sole proprietorships in 1991. Operators of these farms are considered self-employed and they comprise a large portion of self-employed persons in the United States. Sole-proprietor farms account for about one-fourth of all sole proprietorships in the United States. Farm businesses are generally much smaller than businesses in other industries and much of the farm labor is performed by farm operators and their families.

Current tax law allows employers who provide insurance coverage for their employees to deduct the premiums as a business expense. In addition, employees are not taxed on the portion of their insurance premiums that are paid by the employer. Self-employed persons can deduct 25 percent of their own health insurance costs from their taxable income. (This provision expired in 1993, but is expected to be extended into the current year.) Self-employed persons who have access to health insurance from an employer (through an off-farm job) cannot deduct insurance costs from their taxable income. About 24 percent of operators also have off-farm jobs.

Using USDA's 1991 Farm Costs and Returns Survey (FCRS) data, we can answer two questions related to employer-provided insurance. First, how many farm businesses provide cash benefits (which includes health insurance) for their workers? And second, does the farm operator household receive coverage from an employer through an off-farm job?

Who Is Currently Insured?

One reason farmers or their household members take off-farm jobs is to receive fringe benefits such as lower-cost insurance. Two-thirds of farm operator households had someone working in an off-farm job in 1991. Sixty-one percent of these off-farm workers indicated that they obtained either an individual (13 percent) or family (48 percent) health insurance policy through their employer, compared with 75 percent of all workers under age 65. When only the spouse works off-farm, the job is less likely to be the source of insurance that covers

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Employer-Provided Health Insurance
To Farm Operator Households, 1991

Percent of farm households

Source: Farm Costs and Returns Survey, 1991

Components of Farm Labor Expenses, 1991
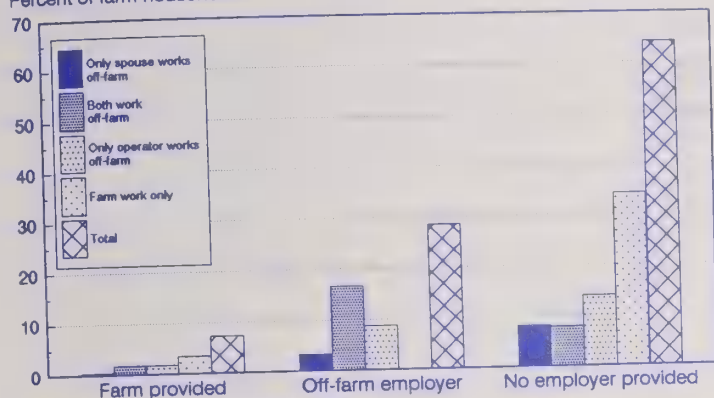
Source: Farm Costs and Returns Survey, USDA

the family than when the operator, or operator and spouse are employed. Families that relied only on farm work were more likely to provide insurance to family members through the farm business, but less than 10 percent of farm operator households did so (figure A-1). Insurance benefits can be deducted as a business expense for household members who are hired to work on the farm.

According to the FCRS, family members were covered by employer-provided health insurance in just over one-third of farm operator households in 1991. The remaining households either purchased insurance on their own, or were not fully covered. The FCRS did not collect data for insurance purchased individually.

Farm households spent more for insurance and retirement than other households. The combined category of medical bills, health insurance, life insurance, and retirement contributions was 21 percent ($3,340) of family living expenses for farm operator households. In comparison, the average insurance and retirement expenditure for U.S. households was about $2,200, or 7.4 percent of family living expenses. While the FCRS data cannot tell us what proportion of this combined category is for insurance alone, data from the 1991 Consumer Expenditure Survey indicate that rural people spend an average of 12 percent more on health care than persons in urban areas.

Farmers' Costs Under the Health Security Act

The proposed Act makes employer contributions toward insurance premiums mandatory. Only four premium categories are proposed: single person, couple, one-parent family, and two-parent families. Age or health status will no longer affect premium levels. Premiums would be established by regional purchasing alliances. Families would select from a variety of plans that contracted with their alliance, including fee-for-service plans, HMOs and point-of-service plans. Premiums in each regional alliance will be established by competitive bid and subject to caps set by the *National Health Board*. Both the employer and the employee pay part of the premium and each is eligible for subsidies.
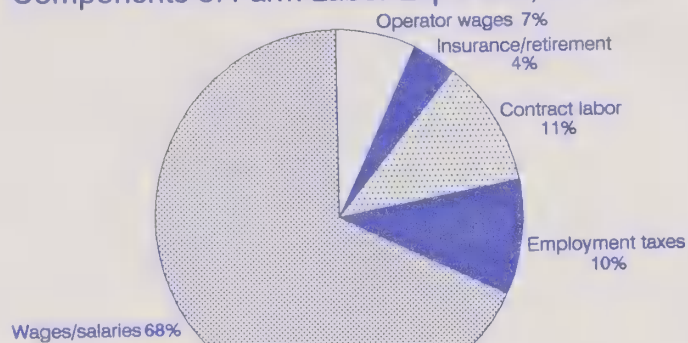
In general, families would pay 20 percent of the insurance premium. Low income families would be eligible for subsidies and some would not be required to make any payments towards their premiums. The family's maximum obligation would rise with its income. For example, a family with income at or below 150 percent of the poverty level would pay the lesser of 20 percent of the weighted average premium, or 3.9 percent of income. A family with income less than $40,000, but above 150 -percent of poverty, would have health premiums limited to 3.9 percent of its income.

Employers would be collectively required to contribute up to 80 percent of aggregate premiums. But, an employer's liability could be less than 80 percent of a worker's premium. Employer premium contributions would be adjusted for regional differences in the average number of workers per family. To illustrate, according to the Congressional Budget Office report, the estimated premium for a two-parent family would be $5,565.[2] The more two-parent families there were with two full-time workers, the smaller the proportion of the 80-percent employer share any particular employer would have to pay. On average, the employer share per full-time equivalent (FTE) worker in a two-parent family would be $3,033, or 55 percent of the total premium.

For businesses not already providing health benefits to their employees, the impact on labor costs and employment might be significant. According to the FCRS, labor costs in 1991 were about 10 percent of the average farm's total costs. Cash benefits as a percent of labor expenses included 4 percent for insurance and pensions, and 10 percent for employment taxes (figure A-2). Its not clear whether the plan requires the farm operator or the crew chief to pay health insurance premiums for contract labor. In either case, mandatory employer contributions will make hired labor more expensive. For some farms, like those specializing in fruits, vegetables, nuts, greenhouse, and nursery crops, both hired labor and contract labor costs are higher than on the average farm. For these specialized farms, labor costs were about 24 percent of total costs. Cash benefits were 20 percent of their labor costs.

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[2] The CBO estimate is only one of several varying estimates, and is different from the Administration's estimate. The CBO estimate is used for illustrative purposes only.

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Percentage of Farms by Labor Expenses, 1991

No labor expenses 64%

$50,000 or more 2%
$20,000 - $49,999 3%
$2,500 - $19,999 10%
Under $2,500 21%
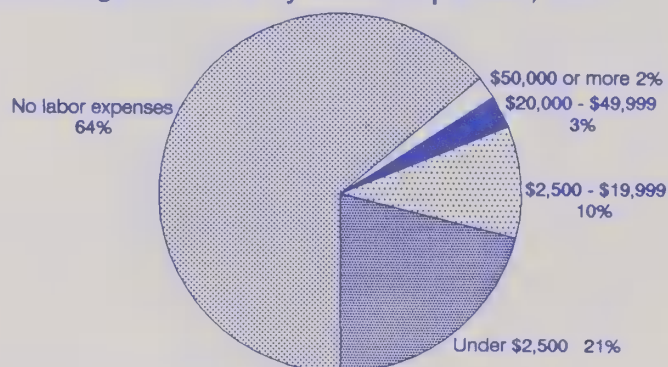
Source: Farm Costs and Returns Survey, USDA

About one-third of the 2.1 million farms run by households had hired labor expenses (figure A-3). These 767,500 farms hired over 2 million persons. Only 8 percent of these farm businesses provided insurance or pension benefits to their employees. For those providing benefits, average costs for health and life insurance, and retirement pensions were about $7,000, or 8.3 percent of total labor costs.

Under the proposed plan, no firm would pay more than 7.9 percent of its payroll for health insurance. Firms with 75 or fewer employees and low average wages, which includes most farms, could receive Federal subsidies to help pay the premiums. Firms with fewer than 25 employees and who pay FTE employees average annual wages of less than $12,000 would have their obligation capped at 3.5 percent of their payroll.

For example, a person working 30 hours per week for 50 weeks at $8.00 an hour qualifies as a FTE employee. The annual payroll for 25 employees at this rate would be $300,000 and the health premium at the 3.5-percent cap would be $10,500. Only 1 percent of farms employed more than 25 employees (full- or part-time) during any month. A tiny proportion of farms had a payroll of over $300,000. Many agricultural workers are part-time or seasonal.

Provisions in the Act adjust the share of the premiums paid by the employer based on the number of hours the employee works and the number of months. For employees working 10 to 29 hours per week, employers would pay only a part of the employer share of the premiums. Employers would not have to pay any premiums for employees working less than 10 hours per week. Persons working part-time and who have not worked a sufficient number of hours to obligate an employer (or group of employers) to pay the full employer share of the premium, would have to make up the difference themselves or with subsidies.

Employers facing an increase in (or beginning of) premiums could shift much of the added cost to workers by reducing wages or reducing the number of workers, which also happens in nonfarm industries. Farm labor is not covered by many minimum wage laws/employment compensation laws. Average 1991 payroll for farms not paying health insurance premiums was $3,200. The additional insurance premium at the 7.9-percent cap would add approximately 0.6 percent to the

farm sector's total expenses. However, almost all of these farms had fewer than 25 employees, making them eligible for subsidies and reduced premium payments.

Tax Treatment Under the Act

Under the proposed Act, self-employed persons, such as farm operators, would pay premiums as both the employer and employee. By 1997, self-employed individuals who use no hired labor would be able to deduct the full amount of their health insurance premiums from their taxable income. This is a bonus for two- thirds of farm operators with no employees who currently can only deduct 25 percent of their insurance premiums. Those with employees will be able to deduct the 80 percent that they pay as an employer. Farmers may be able to deduct more than 80 percent of their own insurance premiums. If as an employer, the farmer makes additional voluntary contributions for all workers that exceed the 80-percent employer share, deductions for their own premiums will increase proportionately.

Under the new provisions, self-employed individuals who work for another employer full-time in any given month will not be eligible to claim the deduction for premium expenses for that month (because the employer paid the 80 percent amount). They will, however, be able to collect the employer premium contribution from an off-farm job towards their full premium obligation. In general, the annual premium share paid by the self-employed as an employer depends on the number of hours worked off-farm per month and the number of months. Other special arrangements are made for self-employed persons and low income families with part-time workers.

Farmers' Benefits Under the Act

Farming presents unique safety problems not found in other industries. Data from the Bureau of Labor Statistics (Runyan, 1993) indicate that casualty rates are 1.5 times higher than the average injury rate for all private sector industries. The Bureau of Labor Statistics' data probably understate injury rates in agriculture, because they exclude firms with fewer than 11 workers.

Job-related injuries are covered under Workers Compensation. However, only 12 states fully cover agricultural workers and 15 provide no coverage for agricultural workers. Without the Act, health insurance costs for farm workers and others who are in high risk occupations increase for the employer and employee. Under the new proposal, insurance premiums could not vary with occupation, age, or health status. The burden of health care costs for people who present the greatest health risks is spread across the system. Farmers as employers would pay the same (presumably lower than current premiums) premiums for farm workers as everyone else. As off-farm employees, their premium share also would be correspondingly lower.

Farmers would have the possibility of deducting 80 to 100 percent of their self-employment health insurance premiums (individual or family premiums) from their taxable income under the proposed Act. While increasing farm costs, the proposed Act could significantly benefit the family. Persons

working at an off-farm job to get insurance coverage would automatically be covered under the new plan, removing this incentive to work off-farm. Those operating small farms with low returns and low off-farm income could receive subsidies for insurance premiums. The farm family would have coverage despite the higher probability (and higher costs) of farm-related injury. Thus, household expenditures in the insurance/pension expense category, reported from the FCRS, would likely decrease.

Those persons working in off-farm jobs that don't normally provide health insurance would incur the expense of insurance premiums. Some off-farm workers already purchasing insurance could find that their share of the premium is more than they currently pay. Farms currently not providing insurance to employees would experience an increase in labor costs. This additional cost could be quite large for farms that employ many workers, such as fruit and vegetable farms. The affect would be lessened to the degree that workers are seasonal or part-time. Firms that could not absorb these costs might resort to hiring fewer people. Farming is highly mechanized and seasonal; therefore, farms have few FTE employees. Raising labor costs could have a greater impact on nonfarm sectors since these sectors rely more heavily on labor than the farm sector.

Several provisions of the Act make allowances for small firms such as most farms. The Act could lower the costs to farms already providing health insurance coverage for their employees through a cap on premiums based on their payroll. The cap would also apply to businesses not currently providing insurance coverage. In addition, subsidies would be provided to businesses with few employees and low average wages.

Data Sources

Data on farm operator households come from the 1991 Farm Costs and Returns Survey. The survey is used to produce national estimates of farm finances based on a sample of approximately 12,000 farms. The survey has several versions that can be used to produce estimates, together or separately. The Farm Operator Resource version, with a sample of approximately 3,000, contains additional information on the farm operator household such as the off-farm employment of household members. In this report, the sub-group of farm operator households excludes those farms organized as non-family corporations or cooperatives, or whose hired manager did not receive any of the net farm income.

Other data come from the 1991 Consumer Expenditure Survey conducted by the Bureau of Labor Statistics, the 1992 Current Population Survey, and a Congressional Budget Office report entitled "An Analysis of the Administration's Health Proposal." Farm safety statistics are from, "A Review of Farm Accident Data Sources and Research", by Jack L. Runyan, USDA Bibliographies and Literature of Agriculture, Number 125.

Related And Unrelated Diversification On Midwestern Farms

by John E. Jinkins[1]

Abstract: In 1990 about a third of Midwestern farms were undiversified and 5 percent were vertically integrated. Undiversified farms were larger than diversified farms and were more likely to be operated by part-time farmers.

Keywords: Diversification, entropy, enterprises, Midwest, vertical integration

Strategic management research considers diversification to be a two-dimensional concept, depending on the number of enterprises a firm participates in and the synergies among the skills needed for each enterprise. Rumelt, for example, felt that diversification occurs when a business undertakes a new activity "that requires an appreciable increase in the available managerial competence within the firm." (8). Among the new competencies that might be needed he included: "understanding of a different production technology, of different marketing concepts, or of new approaches to investment decisions."

The strategic management viewpoint divides diversification into related and unrelated categories. Related diversification occurs when the firm participates in synergistic enterprises, that is enterprises among which managers can easily transfer their skills. An agricultural example of related diversification is wheat and sorghum, which have similar production and marketing characteristics. Unrelated diversification occurs when a firm participates in enterprises requiring different types of managerial knowledge. An agricultural example of unrelated diversification is wheat and dairy, which have vastly different production and marketing characteristics.

The Entropy Measure of Firm Diversification

The entropy measure of firm diversification considers the number of enterprises a firm participates in and the relative importance of each enterprise to the firm (see box). This index has a continuous range between 0 and 100. The value of the index for completely specialized firms, those with only one enterprise, is 0. Firms that divide their efforts equally among all possible enterprises have an index value of 100.

The entropy measure treats all enterprises, no matter how closely related or unrelated, equally. To illustrate this point, consider the example of two farms in an area where there are three potential enterprises - wheat, sorghum, and beef. Farm A divides its output equally among wheat and sorghum, while farm B divides its output equally among sorghum and beef. The entropy measure of diversification is 43 on both farms,

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even though farm B produced both crops and livestock, requiring a broader range of expertise.

Using The Entropy Decomposition To Measure Related and Unrelated Diversification

Theil showed that the entropy measure can be broken down into two parts: within group entropy and between group entropy (9). For a given firm, the sum of these components equals the entropy measure of total diversification. In studies of the effects of diversification on firm performance, Ding and Palepu used within group entropy as a measure of firm diversification among related activities, and between group entropy as a measure of diversification among unrelated activities (2,6).

Let's apply the entropy decomposition to our example to see what information we gain about the kind of diversification on the two farms. To form measures of related and unrelated diversification, all possible enterprises must be divided into groups of related enterprises. In the example, wheat and sorghum form one related group, while beef forms another group. The within group entropy or related measure from Farm A, 43, is the same as total entropy for that farm, showing that farm A has diversified only among highly related enterprises. On Farm B, 43 is the between group, or unrelated diversification measure. Farm B has no related diversifica-

Table B–1—Enterprise groupings

Group	Commodity
Group 1	Barley, Oats, Wheat
Group 2	Corn, Soybeans, Sorghum
Group 3	Hay, Miscellaneous, Other unspecified crops
Group 4	Vegetables, Fruit, Nursery
Group 5	Beef, Sheep, Hogs, Other unspecified livestock
Group 6	Poultry
Group 7	Dairy

Using Entropy To Measure Diversification

The entropy measure of total diversification is:

$$(1) \quad Entropy = \sum_{i=1}^{n} (enterprise\ i\ \%\ of\ tot.\ business) \frac{\ln\left[\dfrac{1}{enterprise\ i\ \%\ of\ tot.\ business}\right]}{\ln(n)}(100)$$

where i refers to each of the n possible enterprises. See Table B-1 for the 18 enterprises used in this analysis.

To obtain the entropy measure of related diversification for each farm, first calculate the following for each related group of enterprises:

$$(2) \quad (group\ \%\ of\ tot.\ business) \sum_{j=1}^{m} (enterprise\ j\ \%\ of\ group\ business) \frac{\ln\left[\dfrac{1}{enterprise\ j\ \%\ of\ group\ business}\right]}{\ln(n)}(100)$$

where j refers to each of the m enterprises in the related group. See Table B-1 for the makeup of the seven groups used in this analysis.

Summing the result of (2) for each group of related enterprises gives the entropy measure of related diversification.

The entropy measure of unrelated diversification is given by:

$$(3) \quad \sum_{k=1}^{g} (group\ k\ \%\ of\ total\ business) \frac{\ln\left[\dfrac{1}{group\ k\ \%\ of\ total\ business}\right]}{\ln(n)}(100)$$

where k refers to each of the g related groups.

tion. Decomposing the entropy measure shows farm B to have diversified more widely than Farm A, although both operations have the same total diversification index.

Applying The Entropy Decomposition

This article uses 1990 Farm Costs and Returns Survey (FCRS) data to measure diversification, related diversification, and unrelated diversification for Midwestern farms with combined agricultural sales and Government payments of $50,000 or more, excluding operations that were predominantly nurseries or greenhouses. Data from the 1990 survey were chosen for this analysis because the 1990 questionnaire provided extensive detail on the types of crops and livestock produced on each farm. In the 1990 FCRS, 2,647 such farms were sampled, statistically representing more than a quarter million similar operations.

Applying the entropy decomposition to survey data requires several judgements about how to best depict business activities. We must first decide which activities to include among the enterprises a farming operation might participate in. This article concentrates on diversification among commodities, including 18 types of crops and livestock among possible

enterprises (see table B-1). Farm related enterprises such as doing custom work for other farmers or leasing land for hunting were not considered in this analysis.

We must also decide what percent each enterprise is of total business activity. Indicators of total business activity must be chosen with care because the choice influences diversification measures. Both Grant et al. and Palepu used firm sales to describe total business activity, which has the disadvantage of not accounting for production held in inventory (4,7).

Using value of production, the market value of both sold and unsold products, accounts for inventory accumulation. However, value of production measures traditionally exclude the value of commodities used as animal feed in order to avoid double counting when describing the flow of commodities from the farm to the marketplace. Hereafter, the term "net value of production" will be used to refer to the traditional value of production measure. Two previous articles in this publication used net value of production to study farm diversification (3,5).

Table B-2—Characteristics of Midwestern farms by diversification category. 1990 1/

	Undiversified	Related diversifier	Unrelated diversifier	Vertically integrated
Farms (number)	56,552	81,671	101,098	38,364
Average size (acres)	1,064	777	845	812
Average net value of prod. (dollars)	275,228	170,041	173,602	108,775
		Percent		
Net value of production	31	27	34	8
Largest proportion of gross income from:				
Cash grains	22	82	31	12
Other crops	6	2	4	1
Livestock (including dairy)	72	16	65	88
Farm legal organization:				
Individual	85	92	85	85
Partnership	7	4	11	13
Family corporations, other corporations, and coops	8	4	4	2
Farm operator with major occupation other than farming	15	6	3	2
Operators over age 50	50	41	41	40
Acres rented	38	66	56	43
Returns on assets	5	5	3	1

1/ Excluding farms with less than $50,000 of gross income from agricultural sales and Government payments.

A value of production measure that includes the value of commodities produced and used on the farm, values of commodities sold, and values of commodities held in inventory seems more appropriate for use with the entropy measure and its decomposition. This article will refer to such a measure as "gross value of production." Remember, when we measure unrelated diversification, we are striving to gauge the degree to which the farm operator participates in enterprises that require distinct types of managerial knowledge. If a farmer raises animal feed, and uses all of it for a cattle operation, using gross value of production for the entropy decomposition acknowledges the managerial effort expended on feed production.

Another important judgement necessary to compute measures of related and unrelated diversification is: How do we divide enterprises reported in the survey into groups that are similar? Palepu made related groups by categorizing industries according to two-digit level Standard Industrial Classification codes (6). For this analysis, crop and livestock enterprises reported in the Farm Costs and Returns survey were organized into groups with similar production and marketing characteristics (table B-1).

Using Gross Value of Production To Measure Business Activity

When gross value of production was used to form the entropy measure of diversification, 5 percent of Midwestern farms had entropy measures of 5 or less, indicating highly specialized operations (figure B-1). Compare that result to the 11

Figure B-1
Diversification Measured with
Gross and Net Value of Production
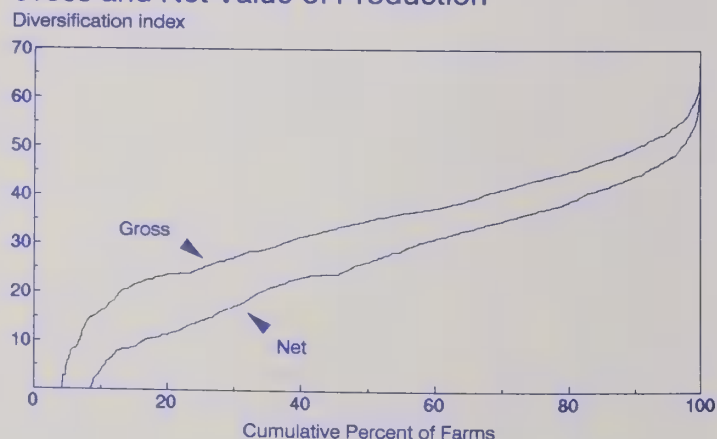
percent of farms that had entropy measures of 5 or less when net value of production was used. Using gross value of production, half of Midwestern farms had entropy measures of 35 or less; with net value of production, half of Midwestern farms had entropy measures of 26 or less.

Related and Unrelated Diversification on Midwestern Farms

In 1990, unrelated diversification was more common than related diversification on Midwestern farms (figure B-2). Thirteen percent of farms had unrelated diversification meas-

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Total, Unrelated, and Related Diversification

Diversification index

Cumulative Percent of Farms
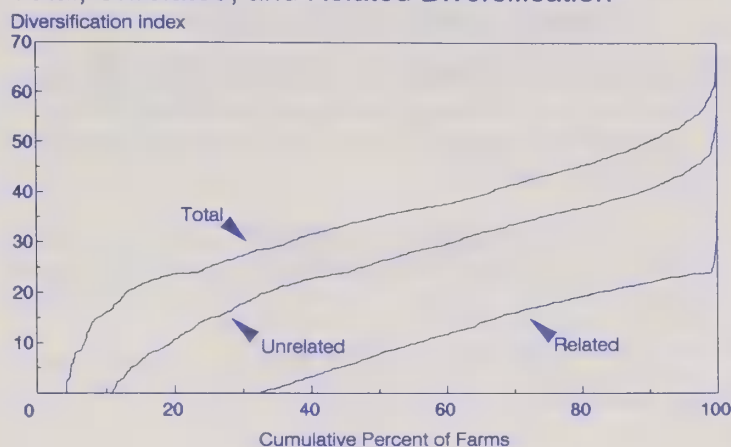
ures of 5 or less; 44 percent had related diversification measures of 5 or less. Half of Midwestern farms had unrelated diversification measures of 26 or less while half had related measures of 8 or less. Of course, these results would vary if commodity groupings other than those in table B-1 were used.

Characteristics of Undiversified Farms

Several researchers have examined how characteristics of diversified farms differ from those of undiversified farms (1,7). Results from this study show that undiversified farms were the largest, whether measured by average acres or net value of production (table B-2). Anosike and Coughenour pointed out that the relationship between size and diversification is influenced by "trade-offs between risk reduction associated with diversification and possible economies-of-size in a particular enterprise." (1).

Over 70 percent of undiversified farms received the largest portion of their gross farm income from livestock production while 82 percent of related diversifiers received the largest portion from cash grain production. The high incidence of cash grain farms among related diversifiers may be explained by the choice of the Midwest study region and by the ease with which managerial knowledge can be transferred among such crops as corn, sorghum, and wheat. Livestock production was the largest income provider on 65 percent of farms classified as unrelated diversifiers and 88 percent of farms classified as vertically integrated.

Some types of farm legal organization may provide more managerial capacity and consequently facilitate diversification on the operation. Also, farmers whose primary occupation is agriculture rather than off-farm employment may be better able to manage diversified enterprises. On farms classified as unrelated diversifiers and vertically integrated, the incidence of partnerships was the highest, 11 and 13 percent, respectively. These farms also had the lowest incidence of farmers whose primary occupation was nonfarm work, 3 percent for operations classified as unrelated diversifiers and 2 percent on vertically integrated operations. Compare that to the 15 percent of undiversified operations that were operated by farmers whose major occupation was not farming.

Diversification Categories

The entropy measure of related and unrelated diversification provides a tool for categorizing farms by degree of diversification. This analysis uses four mutually exclusive diversification categories patterned after those used by Palepu (6):

UNDIVERSIFIED - both related and unrelated diversification less than the median values.

RELATED DIVERSIFIER - related diversification greater than the median value and unrelated diversification smaller than the median value. Or, if both related and unrelated diversification are greater than the median values, related diversification is greater than unrelated diversification.

UNRELATED DIVERSIFIER - related diversification smaller than the median value and unrelated diversification greater than the median value. Or, if both related and unrelated diversification are greater than the median values, unrelated diversification is greater than related diversification.

VERTICALLY INTEGRATED - unrelated diversifiers who used more than 25 percent of their gross value of production as livestock feed or for other on-farm uses.

A farm's diversification strategy could influence its financial performance. Producing several commodities might decrease year-to-year income variability, if the mix includes commodities that are profitable in years when the others experience losses. This risk reduction strategy can have a downside--reduced returns. Additionally, overburdening managerial capacity by producing a variety of highly unrelated commodities could decrease profitability. Palepu attributed the failure of some industrial organization studies to uncover systematic relationships between diversification and profitability in part to "their use of indices that did not distinguish between related and unrelated diversification." (6). In 1990, vertically integrated operations had the lowest return on assets, 1 percent compared with 5 percent for operations categorized as undiversified and related diversifiers. Further research, using time series data, might discover systematic relationships between diversification strategy and farm profitability.

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The Farm Operator Account: An Alternative Measurement of Farm Enterprise Costs and Returns

by William D. McBride[1]

Abstract: Historically, USDA enterprise accounts have included both operators' and landlords' costs and returns and charged resources at their economic cost regardless of ownership. An alternative approach examines farm operators' costs and returns and considers the unique operating arrangement and financial condition of individual farms. Farm-operator accounts estimated for U.S. soybean producers in 1990 reveal an average production cost of $4.59 per bushel, and returns to equity, unpaid labor, management, and risk of $1.25 per bushel. Land tenure and farm financial status have a significant impact on the costs and returns of soybean production.

Keywords: Farm operator, accounting, costs and returns, soybeans, Farm Costs and Returns Survey

Traditional USDA accounting of enterprise costs and returns combines the production costs and returns of farm operators and landlords. Production costs paid by landlords as part of rental agreements are added to the operators' costs and subtracted from the rental value of land. USDA's account treats resources used in production as fully owned by the farm operator-landlord entity, and charges economic costs for these owned inputs (1). For example, land used in the production of a commodity is charged the income that could be earned by renting the land to another producer.

Likewise, the services of resources such as capital and unpaid labor are charged at what they could have earned in alternative uses (opportunity costs). Because this accounting includes economic costs and returns to resources owned by farm operators and landlords, the USDA's cost of production account can be referred to as a "sector account." The account includes the costs of having these resources invested in the farm sector and in the production of a specific commodity rather than elsewhere in the economy.[2]

USDA's cost and return methodology has been continually modified and improved over the years to provide information for agricultural policy decisions. However, the same definitions and account structure that serve the needs of policy analysts have not proved suitable for other users of farm cost and return data. For example, economic costs for fixed inputs such as owned land and unpaid labor may have little influence on the annual production decisions of many farm operators. Also, economic costs are difficult to measure at the farm level.

The USDA account includes imputed opportunity costs to nonland capital, land, and unpaid labor using State average prices. However, each farmer confronts unique resource and economic conditions, such as land productivity, labor skill,

and local employment opportunities, that are not reflected in State averages. Consequently, economic costs are generally inappropriate for analyses that compare individual farms according to costs, efficiency, or other criteria. Also, comparisons among costs and returns for farm operators who own, cash rent, or share rent acreage cannot be examined without distinguishing between land ownership and rental costs and between operator and landlord shares of costs and returns.

Farm-Operator Accounting of Enterprise Costs and Returns

An alternative approach to USDA's traditional accounting for enterprise costs and returns is to focus on costs and returns of farm operators. The traditional and farm-operator approaches differ in two important respects. In the farm-operator approach, farm operators' costs are the sole concern and landlords' costs are omitted. For example, on share-rented acreage only the farm operators' share of input costs and returns are included.

The assumption of full resource ownership is also removed in the farm-operator approach. Farm operators are charged only the costs incurred from using the resources in production. For example, land ownership costs include only real estate taxes and interest on real estate debt. Cash-rented land is charged according to the amount of cash rent paid. Inherent in this approach is the difference in time assumed in each account.

Charging resources at their opportunity cost, as traditionally done, implies a long-run approach in which all resources are variable and can move to alternative uses. In contrast, a short-run approach is used in the farm-operator account because resources such as owned land and unpaid labor are assumed fixed and have no opportunity for use outside the production of a commodity. In this sense, costs in the farm-operator account reflect the "costs of farming" in a given year.

Other characteristics of the traditional account, including the exclusion of marketing costs and the direct effects of Gov-

Table C-1—Farm-operator soybean production costs and returns per planted acre, by region, 1990

Item	North Central	Southeast	Delta	Northern Plains	U.S.
Number of farm operators (percent)	66	16	5	14	100
Yield (bu/ac)	38	22	24	29	33
Farm operator's share (bu/ac)	30	20	21	24	27
			Dollars		
Gross value of production	177.12	114.41	121.56	135.74	158.36
Cash costs:					
Variable cash costs--					
Seed	11.02	9.22	10.37	10.72	10.67
Fertilizer	6.06	22.33	4.74	2.19	7.82
Chemicals	18.55	19.19	18.78	14.79	18.26
Custom operations	2.95	1.98	3.81	2.28	2.83
Fuel, lube, and electricity	8.81	9.22	11.70	11.42	9.43
Repairs	7.26	7.61	10.45	8.84	7.80
Hired labor	3.89	11.02	10.60	4.94	5.67
Purchased irrigation water	.03	0	0	.19	.04
Operating interest	5.89	2.06	4.62	4.75	5.10
Fixed cash costs--					
Real estate & property taxes	3.59	1.84	.82	3.66	3.08
Insurance	3.31	2.64	2.75	3.04	3.13
Interest	9.46	4.25	4.76	7.47	8.05
Land rental	20.26	12.49	15.22	10.59	17.63
Other farm overhead	8.88	5.77	6.11	6.73	7.94
Noncash costs:					
Depreciation	20.33	8.18	9.30	14.37	16.89
Hired labor benefits	.17	.22	.56	.11	.21
Summary of costs:					
Variable cash	64.45	82.64	75.08	60.12	67.61
Fixed cash	45.50	26.98	29.65	31.50	39.83
Noncash	20.50	8.40	9.87	14.49	17.10
Total	130.45	118.03	114.60	106.11	124.54
Total per bushel	4.32	5.98	5.58	4.43	4.59
Return to equity, unpaid labor, risk, & management	46.67	-3.62	6.96	29.63	33.83

ernment program participation, are retained in the farm-operator approach. Costs of production are computed to the point of first sale, or storage if the commodity is not sold immediately after harvest. Drying and hauling costs are included. Because storage costs are excluded, commodities are valued at the harvest price. Direct Government payments and costs on set-aside acreage required for participation in Government programs are excluded.

The farm-operator account is organized to include gross value of production, and cash and noncash production costs (table C-1). Cash costs are divided into variable and fixed components. Variable cash costs include generally recognized operating inputs, such as seed, fertilizer, and chemicals. These costs are incurred only if production of the commodity occurs. Fixed cash costs, including taxes, insurance, interest, and other overhead, are incurred regardless of whether the commodity is produced. Land rental is included as a fixed cash cost because once the lease is signed, costs are incurred regardless of whether the commodity is produced. Also included in the farm-operator account are noncash costs for depreciation and hired labor benefits. Unpaid labor costs are not imputed.

Instead, these costs are included in the residual return to equity, unpaid labor, risk, and management.

Development of Farm-Operator Costs and Returns for Soybean Production

Data from the 1990 Farm Costs and Returns Survey (FCRS) of soybeans are used to develop farm operator cost and return accounts (table C-1). Gross value of production is measured as the value of the farm-operator share of soybean production times the State-average harvest month price of soybeans.

Variable input costs for soybeans are reported directly by farm operators, excluding the landlord contribution. Fixed costs for property taxes, insurance, interest, and other farm overhead are estimated by allocating the whole-farm expenditures reported by each operator according to the value of farm-operator soybean production as a proportion of the total value of farm-operator production.

Real estate taxes are charged only on owned acreage planted to soybeans. Land rental cost is the actual expenditures for

Table C–2—Farm-operator soybean production costs and returns per planted acre, by primary land tenure, 1990 1/

Item	Owned land	Cash rented land	Share rented land
Number of farm operators (percent)	35	25	30
Yield (bu/ac)	33	33	34
Farm operator's share (bu/ac)	32	31	22
	Dollars		
Gross value of production	188.79	180.39	128.31
Cash costs:			
Variable cash costs--			
Seed	11.22	12.12	9.55
Fertilizer	5.27	7.04	7.77
Chemicals	19.37	21.67	15.01
Custom operations	5.20	2.96	1.98
Fuel, lube, and electricity	10.75	8.56	9.65
Repairs	8.32	8.52	6.46
Hired labor	5.42	6.43	3.86
Purchased irrigation water	.01	.06	.04
Operating interest	4.27	6.94	4.59
Fixed cash costs--			
Real estate & property taxes	9.00	1.51	1.35
Insurance	4.86	2.78	2.63
Interest	15.18	6.30	5.75
Land rental	4.38	46.46	2.76
Other farm overhead	10.76	6.92	7.71
Noncash costs:			
Depreciation	20.73	19.06	14.61
Hired labor benefits	.29	.23	.15
Summary of costs:			
Variable cash	69.84	74.31	58.93
Fixed cash	44.17	63.97	20.20
Noncash	21.02	19.28	14.76
Total	135.03	157.56	93.89
Total per bushel	4.17	5.08	4.31
Return to equity, unpaid labor, risk, & management	53.75	22.83	34.42

1/ Land tenure of the majority of planted soybean acreage was used to classify farms.

cash-rented soybean acreage. Among noncash costs, the whole-farm depreciation expense is allocated according to the value of soybean production, while the value of noncash benefits provided for hired labor (housing, meals, etc.) is allocated to soybean production by each farm operator.

Results for 1990 show that U.S. farm operators receive an average of 27 bushels per acre of soybeans from a yield of 33 bushels per acre (table C-1). Farm-operator costs are $124.54 per planted acre of soybeans, or $4.59 per bushel. Return to equity, unpaid labor, risk and management is $33.83 per planted acre, or about $1.25 per bushel. Among regions, costs range from $130.45 per acre in the North Central to $106.11 per acre in the Northern Plains. Despite higher costs, greater yields in the North Central region result in the lowest per bushel costs and highest returns. Returns to equity, unpaid labor, risk, and management vary from $46.67 per acre in the North Central region to -$3.62 per acre in the Southeast.

Impacts of Tenure and Financing

Farm-operator accounts are also estimated for primary land tenure groups (table C-2). Farm operations are classified into tenure groups according to whether the majority of planted soybean acreage is owned, cash rented, or share rented. Average gross value of production is more than $180 per acre for farm operators with a majority of owned and cash rented land, but only about $128 per acre among operators using mostly share rented land.

Those in the share rented group receive only 22 bushels of the total yield of 34 bushels per acre, while those using primarily owned and cash rented land receive nearly all of production. However, costs are much lower for producers in the share rent group, more than $41 per acre below the costs of producers using owned land, and about $64 per acre below producers using cash rented acreage.

Farm operators using cash rented acreage incur the highest costs, at $157.56 per acre, due to an average land rental

Table C-3—Farm-operator soybean production costs and returns per planted acre, by debt-to-asset ratio, 1990

Item	No debt	Debt/asset ratio		
		Less than 0.25	0.25 - 0.49	0.50 or above
Percent of farm operators	29	42	19	11
Yield (bu/ac)	30	35	34	31
Farm operator's share (bu/ac)	25	29	27	24
		Dollars		
Gross value of production	144.11	171.07	158.96	140.98
Cash costs:				
Variable cash costs--				
Seed	9.61	10.77	12.18	9.52
Fertilizer	11.08	6.43	6.11	10.06
Chemicals	16.15	19.32	19.57	16.13
Custom operations	4.45	1.98	2.45	3.72
Fuel, lube, and electricity	8.92	9.79	9.45	9.06
Repairs	7.23	7.40	9.46	7.16
Hired labor	8.12	5.70	5.18	3.62
Purchased irrigation water	0	.08	.01	0
Operating interest	1.20	4.86	7.09	7.23
Fixed cash costs--				
Real estate & property taxes	3.45	3.91	2.44	1.44
Insurance	3.93	3.02	2.93	2.79
Interest	0.03	6.79	14.03	11.79
Land rental	10.77	22.23	15.56	16.29
Other farm overhead	8.41	8.25	7.79	6.86
Noncash costs:				
Depreciation	14.63	18.43	16.59	15.83
Hired labor benefits	.22	.26	.20	.10
Summary of costs:				
Variable cash	66.77	66.34	71.50	66.50
Fixed cash	26.59	44.20	42.75	39.18
Noncash	14.86	18.69	16.79	15.93
Total	108.21	129.23	131.03	121.61
Total per acre	4.37	4.42	4.82	5.03
Return to equity, unpaid labor, risk, & management	35.90	41.85	27.92	19.37

payment of more than $46 per acre. Returns to equity, unpaid labor, risk, and management are highest for producers owning a majority of their soybean acreage, about $19 per acre above those for producers in the other groups. Share renters receive greater returns per planted acre than cash renters ($34 versus $23). Sharing production and costs with landlords provides farm operators with greater returns from soybean production than paying rent to landlords.

Debt-to-asset ratios are used to classify farm operators according to their relative financial status (table C-3). Returns to equity, unpaid labor, risk, and management are highest for producers carrying a modest debt load, but decline as the ratio of debt to asset increases. Producers with a debt-to-asset ratio between 0 and 0.24 have returns of $41.85 per planted acre, compared with $19.37 among producers with a debt-to-asset ratio at or above 0.50. Fixed interest payments per acre are nearly double for producers with debt-to-asset ratios at or above 0.25. Likewise, production costs per bushel increase from $4.37 for producers with no debt to more than $5 for producers with a debt-to-asset ratio at or above 0.50.

Conclusions

Users of cost and return accounts need to be aware of the definitions and assumptions used in various accounting approaches and evaluate the usefulness of the different approaches for each purpose. The analysis of farm operator costs and returns for soybeans illustrates the importance of the definitions and assumptions made in the accounting procedure. Tenure arrangement and farm financial status have a significant impact on costs and returns of soybean production. This influence is not apparent when resources are charged full-ownership costs.

References

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Appendix table 1—Farm income statements, 1990-94

Item	1990	1991	1992	1993F	1994F
	Billion dollars				
Cash income statement					
1. Cash receipts	170.0	168.7	171.2	174.4	175 to 182
Crops 1/	80.1	81.9	84.8	84.1	85 to 89
Livestock	89.3	86.7	86.4	90.3	90 to 93
2. Direct Government payments	9.3	8.2	9.2	12.7	6 to 10
3. Farm-related income 2/	7.6	7.8	7.6	7.4	7 to 9
4. Gross cash income (1+2+3)	186.8	184.7	187.9	194.5	190 to 198
5. Cash expenses 3/	130.9	131.4	130.2	132.0	131 to 139
6. NET CASH INCOME (4-5)	55.9	53.3	57.7	62.5	53 to 63
Deflated (1987$) 4/	49.4	45.3	47.8	50.3	42 to 49
Farm income statement					
7. Gross cash income (1+2+3)	186.8	184.7	187.9	194.5	190 to 198
8. Nonmoney income 5/	6.2	5.9	6.1	6.4	6 to 7
9. Inventory adjustment	3.4	-.3	3.8	-4.1	3 to 8
10. Total gross income (7+8+9)	196.4	190.3	197.7	196.9	202 to 210
11. Total expenses	149.9	150.3	149.1	151.4	151 to 160
12. NET FARM INCOME (10-11)	46.5	40.0	48.6	45.5	45 to 55
Deflated (1987$) 4/	41.1	34.0	40.2	36.7	37 to 43

F = forecast. Totals may not add due to rounding.
1/ Includes CCC loans. 2/ Income from machine hire and customwork, forest product sales, custom feeding service fees, and other farm sources. 3/ Excludes expenses for onfarm operator dwellings and noncash items such as capital consumption and perquisites to hired labor. 4/ Deflated by the GDP implicit price deflator.
5/ Includes the value of home consumption of farm products plus imputed rental value of operator dwellings.

Appendix table 2—Average income to farm operator households, 1990-94 1/

Item	1990	1991	1992P	1993F	1994F
	Dollars per operator household				
Farm operator household income	39,007	36,031	40,648	40,699	40,000 to 43,500
Farm income 2/	5,742 3/	4,393	4,917	5,745	4,600 to 6,100
Self-employment	4,973	2,277	2,333	n/a	n/a
Other	768	2,116	2,584	n/a	n/a
Off-farm income	33,265	31,638	35,731	34,954	35,500 to 37,500
Wages, salaries, and non-farm businesses	24,778	23,551	27,022	n/a	n/a
Interest, dividends, transfer payments, etc.	8,487	8,087	8,709	n/a	n/a

P = preliminary; F = forecast. n/a = not available. Totals may not add due to rounding.
1/ Data for 1990 are expanded to represent the farm operator households surveyed in the Farm Costs and Returns Survey. Data for 1991-92 are expanded to represent the number of U.S. farms and ranches. 2/ Includes self-employment income, wages that operators pay themselves and family members to work on the farm, income from renting farmland, and net income from another farm business. 3/ If the additional 350,000 small farms included in the 1991 analysis were included in the 1990 analysis, the 1990 farm income to the household would be approximately $4,600.

Appendix table 3—Relationship of net cash to net farm income, 1990-94

Item	1990	1991	1992	1993F	1994F
			Billion dollars		
Gross cash income	186.8	184.7	187.9	194.5	175 to 182
Minus cash expenses	130.9	131.4	130.2	132.0	131 to 139
Equals net cash income	55.7	53.3	57.7	62.5	53 to 63
Plus nonmoney income 1/	6.2	5.9	6.1	6.4	7 to 8
Plus value of inventory change	3.4	-.3	3.8	-4.1	3 to 8
Minus noncash expenses	16.5	16.7	16.6	16.7	16 to 18
Labor perquisites	.5	.6	.6	0.6	0 to 1
Net capital consumption	14.6	14.8	14.7	14.8	13 to 16
Capital consumption exc. dwellings	16.0	16.1	16.0	16.1	15 to 17
- Landlord capital consumption	1.4	1.3	1.3	1.3	0 to 2
Minus operator dwelling expenses	3.9	3.9	3.8	3.8	3 to 5
Capital consumption	1.7	1.6	1.7	1.8	1 to 3
Interest	.6	.7	.6	.5	0 to 2
Property taxes	.6	.6	.6	.6	0 to 2
Repair and maintenance	.6	.7	.6	.6	0 to 2
Insurance	.2	.2	.2	.2	0 to 1
Equals net farm income	46.5	40.0	48.6	45.5	45 to 55

F = forecast.
1/ The value of home consumption and gross rental value of all dwellings.

Appendix table 4—Cash receipts, 1990-94

Item	1990	1991	1992	1993P	1994F
			Billion dollars		
Crop receipts 1/	80.1	81.9	84.8	84.1	85 to 89
Food grains	7.5	7.4	8.9	8.1	8 to 10
Wheat	6.4	6.3	7.6	7.3	6 to 8
Rice	1.1	1.1	1.2	.8	1 to 2
Feed grains and hay	18.7	19.5	20.1	19.5	17 to 21
Corn	13.3	14.4	14.8	14.2	13 to 15
Sorghum, barley, and oats	2.0	2.1	2.4	2.1	1 to 3
Oil crops	12.3	12.7	13.0	13.1	13 to 15
Soybeans	10.8	11.0	11.3	11.7	11 to 13
Peanuts	1.3	1.4	1.3	1.0	1 to 2
Cotton lint and seed	5.5	5.1	5.2	5.2	5 to 7
Tobacco	2.7	2.9	3.0	3.0	2 to 4
Fruits and nuts	9.4	9.9	10.2	10.3	9 to 12
Vegetables	11.5	11.5	11.4	11.7	11 to 13
Greenhouse & nursery	8.5	8.8	9.0	9.2	9 to 10
Livestock receipts 2/	89.8	86.7	86.4	90.3	90 to 93
Red meats	51.9	51.1	48.4	51.4	47 to 55
Cattle and calves	39.9	39.6	37.9	39.9	38 to 43
Hogs	11.6	11.0	10.1	11.0	10 to 11
Sheep and lambs	0.4	0.4	0.5	0.5	0 to 1
Poultry and eggs	15.2	15.1	15.4	16.7	16 to 20
Broilers	8.4	8.4	9.2	10.5	10 to 12
Turkeys	2.4	2.3	2.4	2.5	2 to 3
Eggs	4.0	3.9	3.4	3.2	2 to 4
Dairy products	20.1	18.0	19.8	19.6	19 to 21
TOTAL RECEIPTS	170.0	168.7	171.2	174.4	175 to 182

P = preliminary; F = forecast. * = less than $500 million. Totals may not add due to rounding.
1/ Includes sugar, seed, and other miscellaneous crops. 2/ Includes miscellaneous livestock and livestock products.

Item	1990	1991	1992	1993F	1994F
			Billion dollars		
Farm-origin	39.7	38.7	38.5	40.2	39 to 43
Feed	20.4	19.3	19.8	20.7	19 to 23
Feeder livestock	14.8	14.3	13.8	14.5	12 to 16
Seed	4.5	5.1	4.9	5.0	4 to 6
Manufactured inputs	22.0	23.2	22.7	23.2	22 to 28
Fertilizer and lime	8.2	8.7	8.3	8.3	7 to 13
Fuels and oils	5.8	5.6	5.3	5.4	4 to 7
Electricity	2.6	2.6	2.6	2.6	2 to 4
Pesticides	5.4	6.3	6.5	6.8	6 to 8
Interest	13.3	12.1	11.4	10.7	10 to 14
Nonreal estate	6.5	6.1	5.8	5.4	4 to 7
Real estate	6.7	6.0	5.6	5.4	5 to 7
Other operating expenses	42.4	43.9	43.2	44.0	43 to 50
Repair and maintenance	8.6	8.6	8.5	8.9	8 to 12
Labor	14.0	13.9	14.1	14.6	13 to 19
Machine hire and customwork	3.0	3.1	3.3	3.4	3 to 5
Animal health	1.5	1.4	1.7	1.8	1 to 3
Marketing, storage & transportation	4.2	4.7	4.5	3.9	3 to 5
Miscellaneous	11.2	12.1	11.1	11.4	10 to 14
Other overhead expenses	32.5	32.4	33.2	33.3	32 to 35
Capital consumption	17.7	17.6	17.8	17.9	16 to 20
Property taxes	5.7	5.6	5.8	6.1	5 to 7
Net rent to nonoperator landlords	9.1	9.1	9.6	9.3	8 to 10
Total production expenses	149.9	150.3	149.1	151.4	155 to 165
Noncash expenses	16.5	16.7	16.6	16.7	16 to 18
Labor perquisites	.5	.6	.6	.6	0 to 1
Net capital consumption	14.6	14.8	14.7	14.8	14 to 16
Capital consumption exc. dwellings	16.0	16.1	16.0	16.1	15 to 17
- Landlord capital consumption	1.4	1.3	1.3	1.3	0 to 2
Operator dwelling expenses	3.9	3.9	3.8	3.9	3 to 5
Capital consumption	1.7	1.6	1.7	1.8	1 to 3
Interest	.6	.7	.6	.5	0 to 2
Property taxes	.6	.6	.6	.6	0 to 2
Repair and maintenance	.6	.7	.6	.6	0 to 2
Insurance	.2	.2	.2	.2	0 to 1
Cash expenses 1/	130.9	131.4	130.2	132.0	135 to 145

F = forecast.
1/ Total production expenses minus noncash and onfarm operator dwelling expenses.

Appendix table 6—Farm income distribution by selected enterprise type, 1992-94 1/

Item	Crops				Livestock			
	Total	Cash grain 2/	Cotton	Fruit/nut/ vegetable	Total	Red meat	Poultry	Dairy
				Thousands				
Number of farms:								
1992	868	425	17	95	1,226	974	31	140
1993	868	425	17	95	1,226	974	31	140
1994	868	425	17	95	1,226	974	31	140
Income:								
Cash receipts—				Billion dollars				
Crops								
1992	79.0	31.6	4.1	19.3	5.8	4.5	▪	0.8
1993	77.5	29.8	4.5	20.5	6.2	4.8	▪	.9
1994	80	30	5	21	6	5	*	1
Livestock								
1992	6.3	4.3	▪	▪	80.1	39.9	15.4	21.8
1993	6.5	4.6	▪	▪	83.8	42.3	16.7	21.6
1994	7	4	*	*	85	42	18	22
Direct Government payments								
1992	11.1	4.8	.8	▪	3.1	1.8	*	.5
1993	9.2	6.4	.8	▪	3.6	2.9	▪	.5
1994	6	4	0	▪	2	2	*	*
Gross cash income— 3/								
1992	96.5	43.1	5.2	20.3	91.4	48.2	15.7	23.6
1993	96.4	42.4	5.6	21.4	97.7	52.3	16.9	23.7
1994	96	40	6	22	98	52	18	24
Cash expenses—								
1992	61.4	28.8	3.4	11.7	68.8	38.4	9.1	17.9
1993	63.8	28.1	3.7	13.8	72.4	41.8	9.2	18.3
1994	66	29	4	14	74	43	9	19
Net cash income—								
Current dollars 4/								
1992	35.1	14.3	1.8	8.6	22.7	9.8	6.6	5.7
1993	32.6	14.4	1.9	7.6	25.3	10.5	7.7	5.3
1994	30	11	2	7	23	9	8	5
Deflated ($1987)								
1992	29.0	11.9	1.5	7.1	18.8	8.1	5.4	4.7
1993	26.2	11.5	1.5	6.1	20.3	8.4	6.2	4.3
1994	23	9	2	6	18	7	6	4

Figures for 1993 and 1994 are forecast. *=less than $500 million. Numbers are rounded.
1/ Farm types are defined as those with 50 percent or more of the value of production accounted for by a specific commodity or commodity group. 2/ Includes farms earning at least half their receipts from sales of wheat, corn, soybeans, rice, sorghum, barley, oats, or a mix of cash grains. 3/ Cash receipts plus government payments plus farm-related income. 4/ Gross cash income minus cash expenses.

Item	1990	1991	1992	1993F	1994F
			Billion dollars		
Crop output	83.2	81.1	87.8	79	79 to 83
Crop cash receipts	80.1	81.9	84.4	84	85 to 89
Home consumption	*	*	*	*	0 to 1
Value of inventory adjustment	2.9	-1.0	2.8	-5	3 to 8
Animal output	90.8	87.9	87.8	91	90 to 92
Livestock and poultry receipts	89.3	86.7	86.4	90	90 to 93
Home consumption	0.5	0.5	0.5	*	0 to 1
Value of inventory adjustment	0.5	0.7	0.9	1	0 to 2
Services and forestry	13.0	13.1	13.0	14	12 to 14
Machine and customwork	1.8	1.7	1.5	1	n/a
Forest products sold	2.3	2.3	2.6	3	n/a
Other farm-related income	3.5	3.8	3.4	4	n/a
Gross rental value of farm dwelling	5.5	5.3	5.5	6	n/a
Equal: Agricultural sector output	87.1	182.1	188.6	184	197 to 201
Less: Intermediate consumption outlays	91.3	93.1	92.1	94	95 to 99
Farm origin	39.7	38.7	38.5	40	39 to 43
Feed purchased	20.4	19.3	19.8	21	19 to 23
Livestock and poultry	14.8	14.3	13.8	14	12 to 16
Seed purchased	4.5	5.1	4.9	5	4 to 6
Manufactured inputs	22.0	23.2	22.7	23	22 to 26
Fertilizer and lime	8.2	8.7	8.3	8	7 to 13
Pesticides	5.4	6.3	6.5	7	6 to 8
Fuel and oils	5.8	5.6	5.3	5	4 to 7
Electricity	2.6	2.6	2.6	3	2 to 4
Other	29.6	31.1	30.8	31	30 to 35
Repair and maintenance	8.6	8.6	8.5	9	8 to 12
Machine hire and customwork	3.0	3.1	3.3	3	3 to 5
Marketing, storage, and transportation	4.2	4.7	4.5	4	3 to 5
Contract labor	1.5	1.5	2.0	2	1 to 3
Miscellaneous	12.4	13.2	12.5	13	11 to 15
Plus: Net Government transactions	3.2	2.3	3.0	6	2 to 4
+ Direct Government Payments	9.3	8.2	9.2	13	6 to 10
- Vehicle registration and licensing fees	0.4	0.3	0.4	*	n/a
- Property taxes	5.7	5.6	5.8	6	5 to 7
Equal: Gross value added	99.0	91.3	99.4	96	110 to 120
Less: Capital consumption	17.7	17.6	17.8	18	16 to 20
Equal: NET VALUE ADDED	81.3	73.7	81.7	78	83 to 91

P = preliminary; F = forecast. * = less than 0.5 million. n/a = not available.
1/ Components are from the farm income accounts and include income and expenses related to farm operator dwellings. The concept is consistent with that employed by the Organization for Economic Cooperation and Development.

Appendix table 8—Farm income and returns, farm business balance sheet, and rates of return, 1990-94

Item	1990	1991	1992	1993F	1994F
			Billion dollars		
Income and total returns:					
1. Gross farm income 1/	191	186	193	188	198 to 202
2. Wages and perquisites to hired labor	12	12	12	12	10 to 12
3. Other operating expenses, excluding interest	96	98	97	99	100 to 104
4. Capital consumption	16	16	16	16	15 to 17
5. Net income from assets and operators' labor and management (1-2-3-4) 2/	67	60	68	61	70 to 74
6. Income imputed to operators' labor and management	30	32	32	33	32 to 36
7. Residual income to farm assets (5-6)	37	28	36	28	36 to 40
8. Real capital gains on assets	-21	-33	-8	6	3 to 7
9. Total return to assets (7+8)	17	-6	28	34	41 to 45
10. Interest paid	13	11	11	11	10 to 12
11. Real capital gains on debt	7	6	4	4	3 to 5
12. Total return to equity (9-10+11)	11	-11	22	27	33 to 37
13. Real capital gains on equity (8+11)	-14	-28	-3	10	7 to 11
14. Residual income to farm equity (12-13)	25	16	25	17	25 to 29
Balance sheet:					
15. Assets	848	842	861	888	915 to 925
16. Debt	137	139	139	142	142 to 148
17. Equity (15-16)	711	703	722	746	771 to 781
			Percent		
Rates of return and interest rates:					
18. Rate of return on assets (ROA) (7/15)	4.4	3.3	4.2	3.1	3 to 5
19. Real capital gain on assets (8/15)	-2.5	-4.0	-0.9	.7	0 to 1
20. Total real return on assets (18+19)	2.0	-0.7	3.3	3.8	4 to 5
21. Average interest rate paid on debt (10/16)	9.2	8.3	7.8	7.4	7 to 8
22. Real capital gains on debt (11/16)	5.0	4.1	3.2	2.6	2 to 3
23. Real cost of debt (21-22)	4.2	4.2	4.6	4.9	5 to 6
24. Rate of return on equity ((7-10)/17)	3.5	2.3	3.5	2.3	2 to 4
25. Real capital gain on equity ((8+11)/17)	-3.9	-5.6	-1.7	.3	0 to 1
26. Total real return on equity (24+25)	-0.4	-3.2	1.8	2.6	3 to 4
27. Net return on assets (18-21)	-4.8	-5.0	-3.6	-4.3	-4 to -3
28. Real net return on assets (20-23) 3/	-2.3	-4.8	-1.3	-1.0	-1 to 0

F = forecast. Numbers may not add due to rounding.
1/ Excludes operator dwellings. 2/ Numbers in parentheses show components required to calculate the item.
3/ When the total real rate of return on assets exceeds total real cost of debt, debt financing is advantageous.

Appendix table 9—Farm business balance sheet, 1990-94

Item	1990	1991	1992	1993P	1994F
			Billion dollars		
Farm assets	848.3	842.2	861.5	888	915 to 925
Real estate	628.2	623.2	633.1	657	677 to 687
Livestock and poultry	70.9	68.1	71.3	72	72 to 76
Machinery and motor vehicles	85.4	85.8	85.6	87	86 to 90
Crops stored 1/	22.8	22.0	24.1	25	24 to 28
Purchased inputs	2.8	2.6	3.9	3	2 to 4
Financial assets	38.3	40.6	43.4	45	45 to 49
Farm debt	137.4	138.9	139.3	142	141 to 145
Real estate 2/	74.1	74.6	75.6	76	75 to 79
Nonreal estate	63.2	64.3	63.6	66	64 to 68
Farm equity	710.9	703.4	722.2	746	771 to 781
			Ratio		
Selected ratios:					
Debt-to-asset	16.2	16.5	16.2	16	15 to 17
Debt-to-equity	19.3	19.7	19.3	19	18 to 20
Debt-to-net cash income	245.8	260.4	245.3	224	225 to 235

P = preliminary; F = forecast.
1/ Value of non-CCC crops held on farm plus value above loan rate for crops held under CCC. 2/ Includes CCC storage and drying facility loans.

Appendix table 10—Selected farm financial ratios, 1990-94

Ratios	1990	1991	1992	1993P	1994F
			Ratio		
Liquidity ratios:					
Farm business debt service coverage 1/	2.38	2.33	2.48	2.7	2.5 to 2.7
Debt servicing 2/	.15	.15	.15	.1	0 to .2
Times interest earned ratio 3/	4.50	4.31	4.27	4.2	4.4 to 4.8
			Percent		
Solvency ratios:					
Debt/asset 4/	16.2	16.5	16.2	16.0	15 to 17
Debt/equity 5/	19.3	19.7	19.3	19.0	18 to 20
Profitability ratios:					
Return on equity 6/	3.5	2.3	3.5	2.3	2 to 4
Return on assets 7/	4.5	3.3	4.2	3.1	3 to 5
Net farm to gross cash farm income 8/	24.9	21.7	25.8	26.8	28 to 30
Financial efficiency ratios:					
Gross ratio 9/	70.1	71.1	68.5	67.6	68 to 70
Interest to gross cash farm income 10/	6.8	6.2	5.8	6.1	6 to 7
Asset turnover 11/	22.3	21.9	22.1	19.9	19 to 21
Net cash farm income to debt ratio 12/	43.0	37.3	42.8	40.7	42 to 44
Financial leverage index 13/	.79	.70	.84	.74	.8 to .9

P = preliminary; F = forecast.
1/ Assesses the ability of farm businesses to pay principal and interest. 2/ Indicates the proportion of gross cash farm income neeeded to service debt. 3/ Shows the farm sector's ability to service debt out of net income. 4/ Measures debt pledged against farm assets. Ratio indicates degree of financial risk. 5/ Measures the relative proportion of funds provided by creditors (debt) and owners (equity). 6/ Measures the returns to equity capital employed in the farm business from current income. Measures how efficiently farm business assets are used. 7/ Measures how efficiently managers use farm assets. 8/ The profit margin indicates profits earned per dollar of gross income. 9/ Gives the portion of gross cash farm income absorbed by production expenses (claims on farm businesses). 10/ Gives the proportion of gross cash farm income committed to interest payments. 11/ Measures the gross farm income generated per dollar of farm business assets. 12/ Indicates the burden placed on net cash farm income to retire outstanding debt. 13/ Indicates whether the use of financial leverage is advantageous.

List of Tables